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Andrés Mendiburo-Seguel* and Sonja Heintz
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Abstract: The present study investigates the relationships of eight comic styles (fun, benevolent humor, nonsense, wit, irony, satire, sarcasm, and cynicism) with acceptability of prejudice (laughing at different groups and topics), humorous self-image (funniness and frequency of laughter), humor appreciation (funniness and aversiveness of cartoons with different structures and contents), and happiness. A representative Chilean adult sample ($N = 857$, 60.8% women; age $M = 40.50$, $SD = 17.28$) was recruited in face-to-face interviews and online surveys. They completed self-reports of all variables as well as a humor appreciation test. Most of the comic styles related to finding the cartoons funnier. Furthermore, the darker styles were more strongly related to laughing at a variety of topics and groups. Also, happiness was positively related to fun and benevolent humor and negatively to cynicism. This study provides evidence of the criterion validity of the Comic Style Markers in Latin-American cultures and highlights differences between lighter and darker styles.

Keywords: humor, comic styles, humor appreciation, individual differences, happiness

1 Introduction

Research on individual differences of humor comprises approaches from different points of view, for example, related to its creation, its understanding, its psychological, physical, or social effects, and its manifestations (Ruch 2007). The present study incorporates and addresses some of these multiple perspectives by relating humor traits (the sense of humor and eight comic styles: fun, benevolent humor, nonsense, wit, irony, satire, sarcasm, and cynicism), social

***Corresponding author: Andrés Mendiburo-Seguel**, Facultad de Educación y Ciencias Sociales, Universidad Andrés Bello, Santiago, Chile, E-mail: andres.mendiburo@unab.cl

Sonja Heintz, Department of Psychology, University of Zurich, Zurich, Switzerland, E-mail: s.heintz@psychologie.uzh.ch

manifestations (acceptability of prejudice, i.e. laughing at a variety of groups and topics), humor-related self-image (funniness and frequency of laughter), humor appreciation (funniness and aversiveness of several structures and contents) and psychological correlates of humor (happiness).

1.1 Typical humor behavior

The Comic Style Markers (CSM; Ruch et al. 2018a) attempt to complement further humor-related styles like the Humorous Behavior Q-sort Deck (Craik et al. 1996) and the Humor Styles Questionnaire (Martin et al. 2003). The main idea is that there may be distinguishable styles that overlap with existing styles but are at the same time different in theoretical terms, narrower and allow a more detailed differentiation of humor-related styles (Ruch and Heintz 2016; Heintz and Ruch 2019). For example, Ruch and Heintz (2016) reported correlations between the aggressive humor style of the Humor Styles Questionnaire and sarcasm, irony, satire, and cynicism (the “darker” comic styles). According to the authors, this could mean that the aggressive style of humor contains a wider repertoire of manifestations of humor. Heintz and Ruch (2019) recently found empirical redundancies between the aggressive style and sarcasm, between the affiliative style and fun, and between the self-enhancing style and benevolent humor. The self-defeating style and the other comic styles (nonsense, wit, irony, satire, cynicism) showed only small to medium overlaps.

The eight comic styles can be broadly differentiated by being either “darker” or “lighter” (Ruch et al. 2018a). Darker styles gather around the mockery family and include sarcasm (criticizing and ridiculing others people, institutions or topics), cynicism (depreciating commonly acknowledged values, ridiculing the weaknesses in the world and disdaining moral concepts, which are considered ridiculous), satire (similar to sarcasm and cynicism in its criticism and ridicule, but combined with the moral aim of correcting others and improving the status quo), and irony (creating a mutual sense of superiority by stating things in opposition to their meaning, thus confusing those who are not “part of the group”).

Lighter styles relate to benign and social affect, behaviors, cognitions, and goals. They include fun (promoting good mood and camaraderie through joviality and lively and harmless jokes), benevolent humor (showing understanding for the imperfections of the world and mistakes, with an accepting and benevolent treatment), nonsense (presenting ridiculous aspects of things that play with sense and logic, enjoying contradictions and absurdities), and wit (enlightening through quick and appropriate remarks, being able to establish links between ideas or thoughts that are not necessarily connected).

In addition to these theoretical differences between the lighter and darker styles, a principal components analysis (PCA) of the eight styles distinguished two lighter components (basic enjoyment of humor and deeper benign humor) and one darker component (mockery) (Ruch et al. 2018a). Another PCA of the ipsative comic styles (i.e. controlling for individual differences) identified one dimension that separated lighter and darker styles (with cynicism and sarcasm being darker than satire and irony). Furthermore, different brain processes (Papousek et al. 2017) and criterion correlations were found for the lighter in comparison to the darker styles; for example, the lighter styles were more strongly related to extraversion, emotional stability, positive affect, and mindfulness, while the darker styles were more strongly related to agreeableness (negatively) and negative affect (Hofmann et al. 2019; Ruch et al. 2018a; Ruch et al. 2018b).

1.2 Relations of the comic styles with other humor concepts

The CSM has been related to several other humor measures, including self-reports (humor styles, humor as a character strength and humorous temperament) and behavior tests (humor creation and appreciation; Heintz 2019; Heintz and Ruch 2019; Ruch et al. 2018a). These studies found that the lighter comic styles (i.e. fun, benevolent humor, nonsense, and wit) were positively related to cheerfulness, to the affiliative and self-enhancing humor styles, and to creating more punchlines in a punchline production test. The darker styles (i.e. irony, satire, sarcasm, and cynicism) related positively to the aggressive and self-defeating humor styles and also indicated a lower aversiveness to humor stimuli, especially those with a nonsense structure (i.e. containing incongruities that cannot be solved or than can only be partially solved) and sexual contents. Furthermore, all comic styles related to humor as a character strength, although this relationship was small for sarcasm and cynicism, medium-sized for nonsense, irony, and satire, and large for fun, benevolent humor, and wit. The present study continues this line of research, relating comic styles with humor appreciation (including disparaging forms) as well as other self-reports (sense of humor, humorous self-image, and laughing at different groups and topics).

1.3 Comic styles and happiness

One main focus of psychological humor research has been investigating the relevance of humor for well-being. Most studies used the Humor Styles Questionnaire (Martin et al. 2003) and observed that happiness is positively correlated with the

affiliative and self-enhancing humor styles and negatively correlated with the self-defeating humor style (e.g. Martin et al. 2003; Ford et al. 2016). Regarding the comic styles, Ruch et al. (2018b) observed that benevolent humor, fun, and wit had positive correlations with subjective well-being, while the opposite was found for sarcasm and cynicism. However, it has been noted that the explanatory power of both the humor styles and the comic styles for well-being is limited once broad personality traits are accounted for (Ruch and Heintz 2013, Ruch and Heintz 2017; Ruch et al. 2018b).

1.4 Aims of the present study

The present study aims at extending the nomological network of the comic styles in terms of humor and happiness. The specific hypotheses, based on the comic style concepts and the previous findings on the comic styles (Heintz 2019; Ruch et al. 2018b), are as follows:

1. The lighter styles should correlate positively with the sense of humor and humorous self-image (similar to cheerfulness as a temperament basis of the sense of humor and to humor creation).
2. The darker styles should relate to finding disparaging cartoons (black, men disparaging, and women disparaging) funnier and less aversive.
3. Nonsense should relate positively to the funniness and negatively to the aversiveness of nonsense humor appreciation, corroborating the convergent validity of this comic style.
4. The darker comic styles should correlate positively with the acceptability of prejudice against different groups and topics, as this entails laughing at others rather than laughing together with others.
5. Fun and benevolent humor should correlate positively and sarcasm and cynicism should correlate negatively with happiness, while the other styles (nonsense, wit, irony, satire) are tested exploratively.

2 Methodology

2.1 Participants

In total, 857 people from Santiago de Chile took part in the study, who were selected either through online (35%, contacted through an online panel provider and paid for their participation) or face-to-face probability sampling (65%).

Overall, 61% females and 39% males participated, and their age ranged from 18 to 78 years ($M = 40.50$, $SD = 17.28$). Their education background was varied, with 4% having partial or complete primary education, 21% having partial or complete secondary education, 20% having partial or complete technical education, 50% having partial or complete university education, and 5% having completed a degree at the Master's or doctorate level.

2.2 Instruments

2.2.1 The Comic Style Markers (CSM)

The CSM (Ruch et al. 2018a) is a set of 48 items that measure eight different comic styles: Fun (e.g. *"I am a funny joker"*), benevolent humor (e.g. *"I am a realistic observer of human weaknesses, and my good-natured humor treats them benevolently"*), nonsense (e.g. *"I like nonsensical humor"*), wit (e.g. *"I have the ability to tell something witty and to the point"*), irony (e.g. *"I can talk with close friends in a way that only we would know what is the meaning of what we're saying, while outsiders won't sense it is merely irony"*), satire (e.g. *"I have a critical attitude toward arrogant and unfair people, and my mockery serves to establish equality and justice"*), sarcasm (e.g. *"Biting mockery suits me"*), and cynicism (e.g. *"I tend not to trust the sincerity of some intentions and values, and often unmask them by cynical remarks"*). People are asked to apply each statement to the way they experience and express humor and answer them on a 7-point scale, in which 1 means *"strongly disagree"*, 4 means *"neither disagree nor agree"* and 7 means *"strongly agree"*. The procedure by which the markers were translated from English to Spanish followed the steps described by Van de Vijver and Hambleton (1996), considering translation, back-translation, and evaluation by two linguists. Internal consistencies (Cronbach's alpha) were 0.87 (fun), 0.83 (benevolent humor), 0.80 (nonsense), 0.87 (wit), 0.80 (irony), 0.84 (satire), 0.87 (cynicism) and 0.82 (sarcasm).

2.2.2 The six-item version of the sense of humor scale

The Spanish version of the SHQ-6 (Svebak 1996) was adapted using the same procedure as outlined for the CSM. This scale is composed of six statements that measure the sensitivity to humorous content and the attitude toward humorous people and situations on a 4-point Likert scale. Cronbach's alpha for the SHQ-6 in this study was 0.60.

2.2.3 Humor Appreciation Scale (Escala de Apreciación del Humor, EAHU)

The EAHU (Carretero-Dios et al. 2010) assesses humor appreciation. It was partly derived from the *3 WD humor test* (Ruch 1992) and considers six types of humor that are related to content and structure: incongruity-resolution, nonsense, sexual, black, men disparagement and women disparagement. The EAHU consists of 32 written jokes and cartoons that people evaluated regarding their funniness (1 = *not at all funny*, 5 = *very funny*) and aversiveness (1 = *not at all aversive*, 5 = *very aversive*). In the present study, we used two items of each type of humor. In three cases, written jokes were transformed into cartoons in order to eliminate the possible effect of the pollster reading the joke. Internal consistencies, calculated using the Spearman-Brown coefficient, were satisfactory in most of the cases, with four scales below 0.60 (for aversiveness: women disparaging 0.67, sexual 0.63, nonsense 0.65, incongruity-resolution 0.60, men disparaging 0.60, and black 0.61; for funniness: women disparaging 0.54, sexual 0.56, nonsense.65, incongruity-resolution 0.67, men disparaging: 0.55, and black 0.58). The funniness categories correlated highly with each other ($r_s = 0.34\text{--}0.58$, all $p_s < 0.001$), as did the aversiveness categories ($r_s = 0.28\text{--}0.64$, all $p_s < 0.001$), while the correlations between the funniness and aversiveness categories was lower and not always significant ($r_s = -0.49\text{--}0.00$). Total scores for funniness and aversiveness considering all the items for each rating were also computed as indicators of the general inclination to appreciate humor (Cronbach's alpha 0.86 for both scales).

2.2.4 The Subjective Happiness Scale (SHS)

The SHS (Lyubomirsky and Lepper 1999; Spanish version by Páez et al. 2012) consists of four items that measure subjective happiness, which are answered on a 7-point scale. The internal consistency (Cronbach's alpha) was 0.70.

2.2.5 Acceptability of prejudice by laughing at groups

Participants were asked to indicate how much they agreed (“*Could you tell me how much you agree with laughing at these groups of people?*”; scale from 1 = *completely disagree*, 5 = *completely agree*) with laughing at 20 different social groups (women, men, children, elderly, gay men, transgenders/transsexuals, lesbians, religious people, politicians, foreigners, poor people, physically disabled people, mentally disabled people, bald men, overweight people, natives,

feminists, liberals, conservatives and university students). These groups were selected by asking a group of ten university students of the Universidad Andrés Bello in Chile to write down as many social groups as they could, with the only instruction that they had to be broad groups. After reviewing the responses, categories that were mentioned by at least five people were used.

2.2.6 Acceptability of prejudice by laughing at topics

Participants were asked to indicate how much they agreed (1 = *completely disagree*, 5 = *completely agree*) with laughing at 14 different topics (sexual acts, abortion, death, sexual abuse/rape, physical disabilities, religion/other people's beliefs, street harassment, accidents, divorce, natural disasters, terrorism, mental disabilities, pedophilia/child abuse and disappeared detainees¹). To select these topics, the same procedure as in the laughing at groups task was used.

2.2.7 Humorous self-image

Participants were asked to compare themselves with other people regarding their funniness (1 = *I am less funny than other people*, 2 = *I am as funny as other people*, 3 = *I am funnier than other people*) and their frequency of laughter (1 = *I tend to laugh less than other people*, 2 = *I laugh as much as other people*, 3 = *I tend to laugh more than other people*). The two scores correlated 0.64 with one another ($N = 657$, $p < 0.001$).

2.3 Procedure

The face-to-face sample consisted of 553 people, all of which were interviewed by trained pollsters at their houses through a multi-stage sampling method:

- Cluster sampling: Different blocks from Santiago were randomly selected using a public database on socioeconomic status mapping based on the last census (www.mientorno.cl). This assured the representation of different profiles regarding different variables related to socioeconomic status.
- Each pollster received five maps, each of which contained five blocks, each from a different neighborhood. They were instructed to interview one person at five different houses on each block. These houses were selected through systematic sampling.

¹ People murdered for political reasons during Augusto Pinochet's dictatorship, and whose bodies have not been found to date.

- Systematic sampling: On each of the selected squares, pollsters were instructed to start at the north-west corner and walk around the block in a clockwise direction, selecting one house every three houses (for example, house 1, house 4, house 7, etc.).

On each house, pollsters asked to interview one person who was at least 18 years old. People were briefly explained about the study. Those that accepted to participate did not receive any compensation in exchange for their participation. Pollsters were asked to go to each block on different times of the day to avoid sampling biases regarding people that could not be home at certain times (e.g. middle-aged working people during the morning). We tried to lower the possibility of pollsters affecting responses in two ways. First, we used only cartoons (and not jokes) to avoid pollster's personal characteristics to affect perceived funniness or aversiveness (e.g. by reading and timing the jokes differently). Second, all pollsters were carefully trained on how to run the survey.

The online sample consisted of 304 people that were part of an online panel from a paid provider (*Netquest*), with pre-established quotas for sex and age derived from the face-to-face interviews. Participants got paid for their participation by the provider.

The study was carried out in accordance with the recommendations of the ethics committee of the Faculty of the Universidad Andrés Bello. People in the face-to-face sample were read an informed consent by the pollster, containing the main aims of the study and asked to sign a sheet with their name in which it was stated that they read and understood the information. People in the online sample were presented with the same information at the beginning of the study and were asked to select "Yes" after the question "*After reading this information, do you agree to participate?*" if they agreed to participate in the study. Both samples were part of a larger set of studies that involved different topics that were not considered in this study.

3 Results

3.1 Comic styles, the sense of humor, and humorous self-image

Spearman rank correlations were computed to test the relationship between the comic styles and the criterion variables, which are shown in Table 1.

Table 1: Correlations between the comic styles and humor appreciation, sense of humor, happiness, and humorous self-image.

	M	SD	Fun	Humor	Nonsense	Wit	Irony	Satire	Sarcasm	Cynicism
Fun	4.53	1.48								
Benevolent humor (Humor)	5.10	1.10	0.48**							
Nonsense	4.63	1.56	0.39**	0.43**						
Wit	4.64	1.35	0.59**	0.54**	0.36**					
Irony	4.28	1.36	0.46**	0.44**	0.45**	0.54**				
Satire	3.85	1.48	0.40**	0.40**	0.36**	0.48**	0.57**			
Sarcasm	3.38	1.50	0.40**	0.29**	0.38**	0.40**	0.63**	0.64**		
Cynicism	2.99	1.43	0.27**	0.21**	0.34**	0.32**	0.50**	0.58**	0.66**	
Funniness										
Women disparagement	2.00	1.03	0.14**	0.10**	0.10**	0.11**	0.20**	0.11**	0.16**	0.11**
Men Disparagement	2.28	1.18	0.18**	0.13**	0.09**	0.13**	0.18**	0.11**	0.14**	0.11**
Black	2.82	1.25	0.19**	0.17**	0.17**	0.18**	0.24**	0.17**	0.14**	0.11**
Incongruity-resolution	3.27	1.25	0.15**	0.14**	0.11**	0.15**	0.17**	0.08*	0.04	0.01
Nonsense	2.19	1.16	0.10**	0.07*	0.13**	0.08*	0.13**	0.05	0.05	0.06*
Sexual	2.46	1.25	0.25**	0.19**	0.16**	0.16**	0.24**	0.17**	0.18**	0.14**
General funniness	2.50	0.90	0.22**	0.18**	0.17**	0.18**	0.26**	0.15**	0.15**	0.11**
Aversiveness										
Women disparagement	2.93	1.37	0.01	-0.04	-0.02	-0.08**	-0.09**	0.01	0.01	0.04
Men Disparagement	2.47	1.29	-0.06*	-0.13**	-0.05	-0.12**	-0.17**	-0.02	-0.07*	0.01
Black	2.12	1.22	-0.10**	-0.19**	-0.10**	-0.19**	-0.15**	-0.07*	-0.05	0.04
Incongruity-resolution	1.60	0.95	-0.05	-0.14**	-0.03	-0.13**	-0.06*	0.04	0.07*	0.15**
Nonsense	1.51	0.92	0.01	-0.11**	-0.06*	-0.07*	-0.05	0.05	0.06*	0.12**
Sexual	2.53	1.35	-0.10**	-0.16**	-0.13**	-0.13**	-0.20**	-0.10**	-0.11**	-0.05
General aversiveness	2.19	0.90	-0.07*	-0.16**	-0.09**	-0.15**	-0.17**	-0.03	-0.04	0.04
Sense of humor	2.91	0.46	0.25**	0.21**	0.20**	0.15**	0.15**	0.10**	0.09**	-0.03

(continued)

Table 1: (continued)

	<i>M</i>	<i>SD</i>	Fun	Humor	Nonsense	Wit	Irony	Satire	Sarcasm	Cynicism
Happiness	5.20	1.26	0.17**	0.22**	0.05	0.25**	0.09*	0.08*	-0.04	-0.10**
Humorous self-image										
Funniness	1.99	0.68	0.43**	0.28**	0.15**	0.42**	0.23**	0.24**	0.13**	0.08*
Frequency of laughter	2.27	0.71	0.38**	0.27**	0.18**	0.32**	0.24**	0.23**	0.20**	0.12**

Notes: * $p < 0.05$. ** $p < 0.01$.

N for humor appreciation: 857; *n* for sense of humor: 854–857; *n* for happiness: 658–661; *n* for humorous self-image: 640–643.

The first hypothesis posited that the lighter comic styles correlate positively with the sense of humor and the humorous self-image. Regarding the sense of humor, there were positive and significant correlations with every comic style (small to medium effects), with the exception of cynicism. As expected, the largest correlations were obtained with the lighter styles. Also as expected, all styles had significant and positive correlations with the humorous self-image (funniness and frequency of laughter). Wit, fun, and benevolent humor had the highest correlations (large effects), while nonsense, sarcasm, and cynicism had the lowest correlations (small effects). While most styles had correlations of similar magnitude with both ratings, sarcasm tended to correlate lower with funniness than with laughter, while wit and fun tended to correlate more strongly with funniness than with laughter. Overall, the first hypothesis was confirmed.

3.2 Comic styles and humor appreciation

In hypotheses 2 and 3, it was expected that the darker styles correlate with a higher appreciation of disparaging cartoons and that nonsense correlates with a higher appreciation of nonsense cartoons. Indeed, all comic styles had significant positive correlations with the evaluation of funniness for each dimension (with small to medium effects), with the exception of non-significant correlations of sarcasm with nonsense and incongruity-resolution cartoons, cynicism with incongruity-resolution cartoons, and satire with nonsense cartoons. The general funniness score also correlated positively and significantly with all styles (with small to medium effects).

Regarding aversiveness, correlations were either non-significant or negative (with small to medium effects), with the exception of small positive correlations of satire and cynicism with nonsense and incongruity-resolution cartoons. Wit and irony correlated negatively with the aversiveness of all dimensions, except in the case of irony and nonsense cartoons. Benevolent humor and fun correlated negatively with aversiveness in all cases except when elicited by women-disparagement cartoons (and also incongruity-resolution and nonsense cartoons for fun). As expected, nonsense correlated negatively with the aversiveness of nonsense cartoons, and also with the aversiveness of black and sexual cartoons. Satire and sarcasm showed only a few significant negative correlations with the aversiveness dimension: Satire was negatively related to black and sexual cartoons and sarcasm was negatively related to men disparagement and sexual cartoons. Cynicism did not show any negative correlations with the aversiveness ratings. The general aversiveness score correlated negatively with every style

except satire, sarcasm and cynicism. Overall, the comic styles were more consistently related to the funniness of a diverse set of humor stimuli than to finding them less aversive. Thus, Hypothesis 2 was only supported regarding funniness and Hypothesis 3 was fully supported.

3.3 Comic styles and acceptability of prejudice

Spearman rank correlations were run to observe the relationships of each comic style with the agreement with laughing at certain social groups and topics. In Hypothesis 4, it was expected that the darker comic styles relate positively to laughing at the different groups and topics. In line with this hypothesis, positive and significant correlations were found between each comic style (except for benevolent humor and wit) and the agreement with laughing at every considered group (small to medium effects). Considering this, and in order to identify if any of the styles had stronger correlations, the weighted average r for each comic style across the 20 groups was calculated using Fisher's r to Z transformation. As a result, it was found that sarcasm had the highest mean correlation (mean $r = 0.20$), and following the steps presented by Steiger (1980), it was found that it was significantly higher than the mean correlation of humor ($p < 0.05$) and wit ($p < 0.001$). Wit also had a lower mean correlation than all the darker styles (all $ps < 0.05$). The darker styles tended to correlate more strongly with laughing at the groups (mean rs 0.17–0.20) than the lighter styles (mean rs 0.09–0.13).

In order to better understand the relations between the comic styles and the agreement with laughing at the 20 groups, we grouped them according to the three factors found by Mendiburo-Seguel and Ford (under review). The first factor (Cronbach's $\alpha = 0.95$) was composed of laughing at women, men, children, gay men, transgenders/transsexuals, lesbians, elderly and foreigners ("normative ambiguity region", groups society defines as socially disadvantaged in a particular historical period). The second factor (Cronbach's $\alpha = 0.90$) was composed of laughing at conservatives, politicians, liberals, religious people, bald men, students and feminists ("justified prejudice region", in which prejudice is accepted because they are defined as morally inferior, harmful, or violators of cherished values). The third factor (Cronbach's $\alpha = 0.91$) was composed of laughing at mentally disabled people, physically disabled people, poor people, natives and overweight people ("unjustified prejudice region", or groups that society consensually defines as good or righteous). All comic styles had positive correlations with the three factors (in a small to medium range), but the darker styles had numerically higher correlations with the second and third (see Table 2). For factor 1, wit had significantly lower mean correlations than fun

Table 2: Correlations between agreeing with laughing at groups items and the comic styles.

Groups	M	SD	Fun	Humor	Nonsense	Wit	Irony	Satire	Sarcasm	Cynicism
Women	2.70	1.48	0.15**	0.13**	0.13**	0.10**	0.17**	0.14**	0.17**	0.11**
Men	2.98	1.50	0.17**	0.13**	0.13**	0.12**	0.17**	0.15**	0.17**	0.13**
Children	2.48	1.46	0.13**	0.11**	0.16**	0.05	0.16**	0.14**	0.17**	0.17**
Elderly	2.29	1.40	0.11**	0.09**	0.14**	0.04	0.17**	0.15**	0.19**	0.18**
Gay men	2.22	1.39	0.11**	0.10**	0.09**	0.04	0.14**	0.12**	0.16**	0.14**
Transgender/ Transsexuals	2.14	1.36	0.11**	0.09**	0.09**	0.04	0.15**	0.14**	0.16**	0.13**
Lesbians	2.16	1.36	0.11**	0.11**	0.10**	0.05	0.16**	0.16**	0.18**	0.14**
Religious people	2.78	1.55	0.12**	0.08**	0.18**	0.09**	0.20**	0.21**	0.23**	0.28**
Politicians	3.83	1.41	0.11**	0.13**	0.14**	0.11**	0.16**	0.21**	0.18**	0.15**
Foreigners	2.43	1.47	0.14**	0.12**	0.12**	0.09**	0.17**	0.18**	0.21**	0.16**
Poor people	1.79	1.23	0.09**	0.05	0.09**	0.04	0.14**	0.14**	0.16**	0.17**
Physically disabled people	1.60	1.11	0.13**	0.09**	0.09**	0.09**	0.16**	0.16**	0.20**	0.22**
Mentally disabled people	1.50	1.03	0.10**	0.07*	0.08**	0.06*	0.14**	0.16**	0.20**	0.21**
Bald men	2.88	1.51	0.20**	0.17**	0.16**	0.13**	0.25**	0.23**	0.29**	0.23**
Overweight people	2.30	1.42	0.14**	0.13**	0.13**	0.12**	0.20**	0.19**	0.23**	0.23**
Natives	1.89	1.27	0.11**	0.08**	0.09**	0.04	0.13**	0.13**	0.15**	0.13**
Feminists	2.54	1.53	0.11**	0.08**	0.10**	0.08*	0.17**	0.13**	0.16**	0.10**
Liberals	2.88	1.55	0.14**	0.11**	0.17**	0.09**	0.21**	0.16**	0.18**	0.14**
Conservatives	3.09	1.55	0.17**	0.11**	0.15**	0.10**	0.21**	0.22**	0.23**	0.21**
Students	2.80	1.59	0.20**	0.15**	0.17**	0.09**	0.22**	0.15**	0.23**	0.15**
Factor 1 (normative ambiguity)	2.43	1.22	0.17**	0.13**	0.15**	0.09**	0.20**	0.19**	0.22**	0.17**

(continued)

Table 2: (continued)

Groups	<i>M</i>	<i>SD</i>	Fun	Humor	Nonsense	Wit	Irony	Satire	Sarcasm	Cynicism
Factor 2 (justified prejudice)	2.97	1.21	0.19**	0.15**	0.19**	0.12**	0.26**	0.23**	0.27**	0.22**
Factor 3 (unjustified prejudice)	1.82	1.05	0.14**	0.10**	0.12**	0.10**	0.20**	0.20**	0.23**	0.25**
Weighted average <i>r</i>			0.13	0.11	0.13	0.09	0.17	0.17	0.20	0.17
95% CI			[0.06,0.20]	[0.04,0.18]	[0.06,0.20]	[0.02,0.16]	[0.10,0.23]	[0.10,0.23]	[0.14,0.26]	[0.10,0.23]

Notes: **p* < 0.05. ***p* < 0.01. Humor = benevolent humor. *N*: 854–857

($p < 0.01$) irony ($p < 0.001$), satire ($p < 0.001$), sarcasm ($p < 0.001$) and cynicism ($p < 0.05$). For factor 2, fun and benevolent humor had significantly lower mean correlations than irony ($p < 0.05$) and sarcasm ($p < 0.05$), wit had lower mean correlations than all the other styles except for benevolent humor and nonsense ($p < 0.05$ in the case of fun and $ps < 0.001$ for the darker styles). Finally, regarding factor 3, fun had a lower mean correlation than sarcasm ($p < 0.05$) and cynicism ($p < 0.01$), benevolent humor had a lower mean correlation than irony ($p < 0.05$), satire ($p < 0.05$), sarcasm ($p < 0.01$) and cynicism ($p < 0.001$), nonsense had lower a lower mean correlation than irony ($p < 0.05$), sarcasm ($p < 0.05$) and cynicism ($p < 0.01$), and wit had a lower mean correlation than irony, satire, sarcasm and cynicism (all $ps < 0.001$).

Regarding the agreement with laughing at certain items (see Table 3), sarcasm and cynicism were the only styles that showed positive and significant correlations with all topics. In the case of abortion, the correlation with wit was non-significant, while it was descriptively weaker with benevolent humor and fun than with all the other styles. In the case of sexual abuse/rape and pedophilia/child abuse, wit, benevolent humor and fun did not have significant correlations. In the case of street harassment, the correlation with fun, benevolent humor, nonsense and irony was nonsignificant. Wit also showed non-significant correlations with laughing at accidents, mental disabilities and disappeared detainees. Similar to the agreement with laughing at groups, the weighted average r for each comic style was calculated using Fisher's r to Z transformation. Sarcasm had the highest mean correlation (mean $r = 0.21$). Fun and benevolent humor had significantly lower mean correlations than satire ($p < 0.05$), sarcasm ($p < 0.01$) and cynicism ($p < 0.05$), nonsense had a lower mean correlation than sarcasm ($p < 0.05$), wit had a lower mean correlation than irony ($p < 0.05$), satire ($p < 0.01$), sarcasm ($p < 0.001$) and cynicism ($p < 0.01$). Again, the darker styles tended to correlate more strongly with laughing at groups (mean rs 0.15–0.21) than the lighter styles (mean rs 0.09–0.12).

A PCA was computed to determine whether the 14 topics can be summarized by a smaller set of components. The scree test suggested two components (first four eigenvalues: 6.51, 1.75, 0.72, 0.67). The two components explained 59.1% of the variance, and the component correlation was 0.46. The first component (Cronbach's $\alpha = 0.89$) was composed of laughing at sexual abuse/rape, pedophilia/child abuse, mental disabilities, disappeared detainees, physical disabilities, street harassment, terrorism and abortion (loadings ranging from 0.51–0.89). This component mostly represented laughing at “taboo” topics. The second component (Cronbach's $\alpha = 0.86$) was composed of laughing at divorce, sex, natural disasters, religion/other people's beliefs and accidents (loadings ranging from 0.59–0.85). This component mostly represented laughing

Table 3: Correlations between agreeing with laughing at topics items and the comic styles.

Topics	<i>M</i>	<i>SD</i>	Fun	Humor	Nonsense	Wit	Irony	Satire	Sarcasm	Cynicism
Sexual acts	3.50	1.48	0.21**	0.18**	0.20**	0.16**	0.24**	0.22**	0.24**	0.17**
Abortion	1.67	1.15	0.09**	0.07*	0.10**	0.04	0.17**	0.16**	0.24**	0.20**
Death	2.34	1.52	0.07*	0.13**	0.17**	0.10**	0.20**	0.20**	0.25**	0.24**
Sexual abuse/rape	1.19	0.64	0.01	0.03	0.06*	0.03	0.05	0.05	0.12**	0.14**
Physical disabilities	1.46	0.97	0.08*	0.05	0.09**	0.04	0.14**	0.16**	0.23**	0.24**
Religion/other people's beliefs	2.39	1.50	0.14**	0.11**	0.17**	0.14**	0.24**	0.26**	0.29**	0.31**
Street harassment	1.58	1.06	0.01	0.03	0.05	0.06*	0.05	0.14**	0.13**	0.13**
Accidents	2.05	1.32	0.07*	0.09**	0.13**	0.02	0.11**	0.13**	0.19**	0.18**
Divorce	2.91	1.56	0.15**	0.13**	0.21**	0.13**	0.22**	0.21**	0.24**	0.16**
Natural disasters	2.27	1.45	0.05	0.14**	0.15**	0.08*	0.21**	0.23**	0.25**	0.19**
Terrorism	1.69	1.14	0.10**	0.11**	0.13**	0.09**	0.17**	0.23**	0.25**	0.20**
Mental disabilities	1.38	0.89	0.08*	0.05	0.10**	0.04	0.13**	0.15**	0.21**	0.19**
Pedophilia/child abuse	1.16	0.61	0.05	0.04	0.06*	0.04	0.08*	0.14**	0.15**	0.14**
Disappeared detainees	1.40	0.91	0.09**	0.07*	0.08**	0.05	0.12**	0.15**	0.19**	0.14**
Component 1	1.44	0.70	0.12**	0.10**	0.14**	0.10**	0.20**	0.23**	0.28**	0.25**
Component 2	2.58	1.13	0.16**	0.17**	0.23**	0.14**	0.27**	0.27**	0.32**	0.26**
Weighted average <i>r</i>			0.09	0.09	0.12	0.07	0.15	0.17	0.21	0.19
95% CI			[0.02, 0.16]	[0.02, 0.16]	[0.05, 0.19]	[0.01, 0.14]	[0.08, 0.22]	[0.10, 0.23]	[0.15, 0.27]	[0.13, 0.25]

Notes: * $p < 0.05$. ** $p < 0.01$. Humor = benevolent humor. *N*: 854–857

at everyday topics. Component 1 tended to have stronger positive correlations with the darker styles, with significantly higher mean correlations when compared with the lighter styles in all cases except nonsense, while Component 2 had stronger correlations with all styles, with wit being the only style with a significantly lower mean correlation than the darker styles.

3.4 Comic styles and happiness

Hypothesis 5 set up positive correlations of fun and benevolent humor and negative correlations of sarcasm and cynicism with happiness. As shown in Table 1, Happiness indeed correlated positively with wit, benevolent humor, fun, irony and satire and negatively with cynicism (small to medium effects). The correlations with nonsense and sarcasm were not significant.

4 Discussion and conclusion

4.1 Comic styles and humor

The first hypothesis, which posited that the lighter comic styles correlate positively with the sense of humor and the humorous self-image, was confirmed. Regarding sense of humor, there were positive and significant correlations with every comic style, with the exception of cynicism. This may be related to the fact that the different comic styles share the involvement with humorous behavior and the ability to perceive humor, which seems less relevant for cynicism. This could be because cynicism emphasizes a specific attitude underlying humor production (i.e. criticism, destruction, and rejection of standards), which is not captured by the employed sense of humor scale. The fact that correlations were also positive for the darker styles (except cynicism) implies that the sense of humor, as conceptualized in the SHQ-6, can be based on different types of comical interactions than can be more or less social or critical. However, the largest correlations were obtained with the lighter styles, which is in line with a narrower approach of sense of humor as a purely positive construct, which was corroborated in previous research (e.g. Craik et al. 1996; Martin et al. 2003; Ruch and Heintz 2019).

Regarding the humorous self-image, high scorers in fun, wit, and humor viewed themselves as funnier and laughing more often, while this was less the case for high scorers in nonsense, sarcasm, and cynicism. Still, all scores were

significant, albeit with different effect sizes (ranging from weak to cynicism to large for fun and wit). Every comic style thus related to having a better humorous self-image.

Hypotheses 2 and 3 dealt with humor appreciation, where it was expected that the darker styles correlate with a higher appreciation of disparaging cartoons and that nonsense correlates with a higher appreciation of nonsense cartoons. Hypothesis 3 was confirmed, supporting the convergent validity of the nonsense scale (in line with Heintz 2019). Hypothesis 2 was confirmed for the funniness ratings, but not for the aversiveness ratings. This fits to the more general pattern observed between the comic styles and humor appreciation, as the eight styles correlated more consistently with funniness (52 of 56 correlations significant), while the correlations with aversiveness were less consistent (35 of 56 correlations significant). Interestingly, the previous study that investigated comic styles and humor appreciation (Heintz 2019) obtained the reverse pattern of correlations (i.e. more consistent correlations with aversiveness than funniness). This difference could be due to the different humor appreciation tests employed (the 3 WD vs. the EAHU), which differed in the contents of the humor stimuli, or due to cultural differences. Both findings however highlight the importance of separating at least two different response dimensions in humor appreciation.

It is also notable that the darker styles did not show numerically stronger correlations with the funniness (positively) and aversiveness (negatively) of disparaging cartoons than the lighter styles. In future studies, the humor stimuli could be more closely matched to the darker comic styles (e.g. by including political satire, ironic, sarcastic, and cynical remarks rather than black and gender disparaging humor) to see whether the specific style of “dark humor” depicted in the stimuli matters. Furthermore, although the disposition to engage in the comic styles was related to finding the cartoons funnier, it could be that the reason for this appreciation was different for lighter and darker styles. Specifically, the darker styles (satire, sarcasm and cynicism) showed weak or nonsignificant correlations with the funniness of incongruity-resolution and nonsense cartoons, both related to the structure of the cartoons. Maybe in these three styles the content of the joke (e.g. aggression, disparagement, sex) leads to more funniness, while in the other, mostly lighter styles, the structure plays a larger role.

Regarding the acceptability of prejudice, measured as the degree to which people agreed with laughing at certain groups and topics, significant positive correlations were found for the darker styles, confirming Hypothesis 4. Differences among lighter and darker styles were clearer when topics involved taboos or social groups occupying a position in society of vulnerability to prejudice. As proposed by the normative window model of prejudice (Crandall et al. 2013), prejudice against social groups can range from being completely

acceptable and justified (e.g. criminals) to completely unacceptable and unjustified (e.g. doctors, grandmothers). Groups in between are in a position of “normative ambiguity” characterized by emergent but not yet consensual egalitarian norms that prohibit expressions of prejudice. Prejudice against groups in the normative ambiguity position is thought to be shifting from being completely justified to completely unjustified. While the lighter and darker styles tended to have similar correlations with the acceptability of prejudice against groups in the justified prejudice position, the darker styles correlated more strongly with the acceptability of prejudice against groups in the normative ambiguity and the unjustified prejudice positions. It is possible that people higher in darker styles feel less constrained by social norms prohibit expressions of prejudice making them more willing to express prejudice against “socially protected” groups by mockery and ridicule.

It is also interesting to note that wit tended to be less related to laughing at groups or topics than many of the other styles (especially the darker ones). This could be because high scorers in wit did not find much amusement in the simple action of laughter, as it lacks the sophistication and cleverness associated with this comic style. This is also in line with the finding that this comic style was related to verbal intelligence and culture (Ruch et al. 2018a).

4.2 Comic styles and happiness

As hypothesized (Hypothesis 5), happiness was positively related to fun and benevolent humor and negatively to cynicism, which corresponds to some extent to the correlation observed for the sense of humor. However, there were also positive correlations with wit, irony and satire, although these were smaller in magnitude. Thus, there was a clear positive relationship between happiness and the lighter styles, especially those related to sharing good humor and a loving attitude with others. However, there were also positive relationships with the darker styles of irony and satire, though these are less clearly dark (see also Ruch et al. 2018a) and also contain cognitive (e.g. saying the opposite of what is meant) and moral elements (e.g. aiming to improve wrongdoings). This is an important difference to the humor-style approach, as the eight comic styles were not constructed or selected specifically to represent positive or negative functions or aspects of humor, but instead capture the variety of how people engage in humor in their everyday lives. These findings also replicate and extend previous findings that assessed subjective well-being (life satisfaction, positive and negative affect) instead of subjective happiness (Ruch et al. 2018b).

4.3 Limitations of the study

This study has some limitations. First, reliabilities for funniness (e.g. women disparaging, sexual and black) and aversiveness (e.g. men disparagement) in the EAHU scale adaptation were low (below 0.60). Working with two items per scale implied the risk of low reliabilities, but this was a risk that had to be taken, considering that response times were longer than in a typical face-to-face survey and people could easily get bored or simply leave the study. Nevertheless, this must be considered when interpreting results regarding humor appreciation and its relation with comic styles; that is, the correlations rather underestimate the true relationship between the appreciation of specific contents and structures in humor and the comic styles.

Second, the design of the study allowed the possibility of the pollster effect interfering with the results, at least in the face-to-face samples. As explained before, we used two methods to avoid the effect of the pollster on responses, but as in every face-to-face survey, no perfect control for these effects was possible. Given that the present study showed similarities in several psychometric properties of the comic styles (e.g. factor structure, patterns of correlations between the scales, reliability) to previous studies that mostly used online samples, the biases introduced by the pollster effect are however deemed to be minimal.

4.4 Conclusions

The present study contributes to the validation and nomological network of eight comic styles and of individual differences in humor more generally. The criterion validity and nomological network of the comic styles were extended in terms of the sense of humor, acceptability of prejudice (laughing at different groups and topics), humor appreciation (funniness and aversiveness of cartoons with different contents and structures), humorous self-image (in terms of funniness and frequency of laughter), and happiness. While the styles showed similarities in humor appreciation and the humorous self-image, the lighter and darker styles differentially related to the sense of humor, acceptability of prejudice, and happiness. Importantly, individual comic styles showed slightly different correlational patterns with these criteria, supporting the idea that both research and applications of humor need to take into account the diversity of individual differences in humor by differentiating at least eight comic styles.

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Bionotes

Andrés Mendiburo-Seguel

Andrés Mendiburo-Seguel is an associate professor at the Faculty of Education and Social Sciences of Universidad Andrés Bello in Chile. His main research interests in humor are experimental methods applied to humor appreciation and disparagement humor, and individual differences.

Email: andres.mendiburo@unab.cl, Address: Fernández Concha 700, Las Condes, Santiago de Chile.

Sonja Heintz

Sonja Heintz is a senior research and teaching assistant at the Department of Psychology at the University of Zurich in Switzerland. Her main research interests in humor are individual differences (humor and comic styles, dimensions of the sense of humor), measurement (humor questionnaires and humor-related behaviors), and positive psychology (relationships of humor with character strengths and well-being, virtuous forms of humor).